(a) at least two different strips of a non-reactive substrate extending along a longitudinal axis and supporting, spaced along that longitudinal axis, a linear array of different, chemically reactive substances exposed on a surface of the strip; and

(b) a support frame for receiving and holding the strips for mutual exposure to a material to be screened wherein the filaments include isolating bands of a chemically repellant coating between the chemically reactive substances.

36. A chemical screening apparatus comprising:

(a) at least two different strips of a non-reactive substrate extending along a longitudinal axis and supporting, spaced along that longitudinal axis, a linear array of different, chemically reactive substances exposed on a surface of the strip; and

(b) a support frame for receiving and holding the strips for mutual exposure to a material to be screened wherein the filaments include recessed pockets receiving the chemically reactive substances.

REMARKS

The Office Action of July 2, 2002 has been carefully reviewed.

ELECTION/ RESTRICTION

Applicant has discovered that claim 22 is properly dependent on claim 21, not claim 1, as indicated, and therefore requests that claim 22 be removed from the elected claims.

DRAWINGS

Applicant has submitted formal drawings, copies of which are attached.

CLAIM REJECTIONS 35 U.S.C. §112

Claim 2 has been amended to change the article "the" to "a" to correct the antecedent basis problem noted by the Examiner and claim 5 has been amended to recite a nonreactive "substrate" so as to find antecedent basis in claim 1.

The term "recessed portions" in claim 9 has been replaced with the phase "pockets" to more clearly reference the pockets 54 recited in the specification and shown

in Fig. 10. Applicant intends this term to cover local depressions spaced along the longitudinal axis of the substrate.

The redundancy of claims 11 and 13 has been corrected by amending the dependency of claim 13. Claim 11 thus differs from claim 13 by the limitation of claim 12 incorporated into claim 13.

It is believed these changes address formal matters unrelated to the scope of the claims with respect to the prior art and thus do not limit the application of the doctrine of equivalents to these claims.

ADDITIONAL ART

The Applicant has submitted herewith additional art uncovered in a European search conducted on a counterpart to the present application. A coversheet and form 1449 are also attached.

NEW CLAIMS

Claims 34-36 recast claims 7-9 in independent form.

CLAIM REJECTION 35 U.S.C. §102.

The claims have been amended in light of the presented art to focus on the kit aspect of the present invention. These amendments are supported by the specification at page 10 lines 6-13 as well as elsewhere in the application as filed.

Applicant generally agrees with the Examiner's characterization of the Gross reference but believes the Gross reference does not teach invention of the claims as amended.

First, Gross does not describe filaments as now required by claim 1.

Second Gross does not teach "a library of different filaments". It appears from Gross's example of urine analysis, that each of the strips in Gross is the same, that is, each strip provides the same tests (generally described at lines 10 through 13 of column 1). This is in contrast to the present invention in which different strips are used to vastly increase the number of simultaneous measurements that can be made on a single material to be analyzed.

Third, for the reasons provided above, Gross does not teach "a library of different filaments" nor mounting on a frame a "subset of the library of different filaments".

Fourth, Gross does not describe a support frame for "holding the strips for mutual exposure to the material to be screened". At column 1, Gross describes placing the test

strips one at a time on the holder after exposure to urine. A green signal lamp associated with each strip is provided to control the timing of this placement. Use of the Gross device for mutual exposure in the holder would require additional undisclosed mechanisms to retain the strips and apply the urine to them when in the holder. Further, simultaneous exposure of the strips of Gross would defeat the purpose of Gross to speed the testing of multiple different urine samples. Thus, Gross also teaches away from the modifications proposed by the examiner.

CLAIM REJECTIONS 35 U.S.C. §103

Applicant can find no reference in Stuelpnagel of using fiber optics having the chemically reactive substances spaced along their longitudinal axes as required in claim 1 of the present invention. Instead, Stuelpnagel describes the use of bundled fiber optics as substrates for chemically reactive substances placed at their ends.

Stuelpnagel teaches away from the combination proposed by the Examiner because the bundling of the fiber optics would interfere with reactions and analyses of reactive substances placed along the length of the fibers. Given the clear emphasis of Stuelpnagel in using the fibers for a read-out, the combination of Gross and Stuelpnagel, following the teaching suggestions of each, would lead to a read-out system in which fibers of Stuelpnagel were used to read the strips of Gross. Optical fibers would provide no advantage in supporting the limited number of reactions and large reaction areas required in the urine testing of Gross. Stuelpnagel, which as the Examiner notes contemplates analyses of oligonucleotides, does not suggest the modification proposed by the Examiner.

The benefits of being able to mass produce filaments that in turn may be made into semi-custom arrays by use of a kit approach is not taught or suggested by either of these references.

With respect to claim 8, Applicant can find no teaching in Stuelpnagel describing using a repellant coating between reactive substances and, in fact, Stuelpnagel seems to contemplate that the reactive materials (on beads) may be randomly arrayed on the ends of the fibers in contacting positions.

With respect to Bentsen, Applicant generally acknowledges that bar codes are used on test materials. Nevertheless, Applicant believes there is no teaching or suggestion for placing a marker on the claimed multiple strips in a holder of the present

invention in either Bentsen, Gross or Stuelpnagel. In Bentsen, the marker is used to detect a reaction, a purpose not relevant to the present invention. In Gross, all the strips are the same and there is no need for a marker. Likewise, in Stuelpnagel markers are not needed because the fibers are not separated from the bundle. In contrast, the use of a marker on the strips in the present invention allows semi-customization of the array by selecting among standard strips as mentioned in the present invention on page 4, lines 22-26, a motivation not relevant to the teachings of Bentsen, Gross or Stuelpnagel.

ADDITIONAL COMMENTS IN LIGHT OF NEWLY CITED ART

Dehlinger shows the synthesis of chemically reactive substances on a filament but does not teach the preparation of a library of such filaments and assembly of different filaments of a subset of the library onto a frame.

Coassin teaches assay strips in a frame (see Fig. 9) although it is not clear that the strips are different, and there is no teaching of selecting the strips from a larger library for generation of custom arrays. Coassin suggests that filaments may be used as a substrate but does not show or describe filaments used in a frame.

For the reasons described above, it is respectfully submitted that claims 1-13 are now in condition for allowance and allowance is respectfully requested.

Respectfully submitted,

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VERSION OF CLAIMS WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) A chemical screening [apparatus] kit comprising:

(a) [at least two different strip] a library of different filaments of a non-reactive substrate extending along a longitudinal axis and supporting, spaced along that longitudinal axis, a linear array of different, chemically reactive substances exposed on a surface of [the strip] each filament; and

(b) a support frame for receiving and holding [the strip] a plurality of different filaments being a subset of the library of different filaments, the support frame holding the plurality of different filaments for mutual exposure to a material to be screened.

2.(Amended) The chemical screening apparatus of claim 1 wherein the [strip] filament has a length taken along the longitudinal axis of at least ten times [the] a maximum cross-sectional dimension of the [strip] filament taken across the longitudinal axis.

5.(Amended) The chemical screening apparatus of claim 1 wherein the non-reactive [strip] substrate is a glass fiber.

6.(Amended) The chemical screening apparatus of claim 1 wherein the support frame holds the [strip] filaments transversely spaced in parallel relationship.

7.(Amended) The chemical screening apparatus of claim 1 wherein the support frame holds the [strip] filaments transversely spaced along two perpendicular axes.

8.(Amended) The chemical screening apparatus of claim 1 wherein the [strip] filaments include isolating bands of a chemically repellant coating between the chemically reactive substances.

9.(Amended) The chemical screening apparatus of claim 1 wherein the [strip] filaments include recessed [portions] pockets receiving the chemically reactive substances.

10.(Amended) The chemical screening apparatus of claim 1 wherein the [strip] filaments include a marker allowing the [strip] filaments to be distinguished.

12.(Amended) The chemical screening apparatus of claim 1 wherein the [strip] filaments include a marker allowing a given end of the [strip] filament to be identified.

13.(Amended) The chemical screening apparatus of claim [1] 12 wherein the marker is selected from the group of printing and fluorescent material.

34. (New) A chemical screening apparatus comprising:

(a) at least two different strips of a non-reactive substrate extending along a longitudinal axis and supporting, spaced along that longitudinal axis, a linear array of different, chemically reactive substances exposed on a surface of the strip; and

(b) a support frame for receiving and holding the strips for mutual exposure to a material to be screened wherein the support frame holds the filaments transversely spaced along two perpendicular axes.

35. (New) A chemical screening apparatus comprising:

(a) at least two different strips of a non-reactive substrate extending along a longitudinal axis and supporting, spaced along that longitudinal axis, a linear array of different, chemically reactive substances exposed on a surface of the strip; and

(b) a support frame for receiving and holding the strips for mutual exposure to a material to be screened wherein the filaments include isolating bands of a chemically repellant coating between the chemically reactive substances.

36. (New) A chemical screening apparatus comprising:

(a) at least two different strips of a non-reactive substrate extending along a longitudinal axis and supporting, spaced along that longitudinal axis, a linear array of different, chemically reactive substances exposed on a surface of the strip; and

(b) a support frame for receiving and holding the strips for mutual exposure to a material to be screened wherein the filaments include recessed pockets receiving the chemically reactive substances.